



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/890,181	12/27/2001	Michael Laycock	LAL-C522-US	7544
7590	01/30/2004			EXAMINER
Daniel C Stelter A Unova Company Cost Center Acm Cincinnati Machine 4701 Marburg Avenue Cincinnati, OH 45209			OJINI, EZIAMARA ANTHONY	
			ART UNIT	PAPER NUMBER
			3723	
			DATE MAILED: 01/30/2004	

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	09/890,181	LAYCOCK, MICHAEL <i>[Signature]</i>
<b>Period for Reply</b>	Examiner	Art Unit
	Anthony Ojini	3723
<i>-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --</i>		
<b>A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.</b>		
<ul style="list-style-type: none"> <li>- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.</li> <li>- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.</li> <li>- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.</li> <li>- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).</li> <li>- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).</li> </ul>		
<b>Status</b>		
1) <input checked="" type="checkbox"/> Responsive to communication(s) filed on <u>12 December 2003</u> .		
2a) <input type="checkbox"/> This action is FINAL.                    2b) <input checked="" type="checkbox"/> This action is non-final.		
3) <input type="checkbox"/> Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under <i>Ex parte Quayle</i> , 1935 C.D. 11, 453 O.G. 213.		
<b>Disposition of Claims</b>		
4) <input checked="" type="checkbox"/> Claim(s) <u>1-8, 10 and 12</u> is/are pending in the application.		
4a) Of the above claim(s) <u>3, 4, 7, 10 and 12</u> is/are withdrawn from consideration.		
5) <input type="checkbox"/> Claim(s) _____ is/are allowed.		
6) <input checked="" type="checkbox"/> Claim(s) <u>1, 2, 5, 6 and 8</u> is/are rejected.		
7) <input type="checkbox"/> Claim(s) _____ is/are objected to.		
8) <input type="checkbox"/> Claim(s) _____ are subject to restriction and/or election requirement.		
<b>Application Papers</b>		
9) <input checked="" type="checkbox"/> The specification is objected to by the Examiner.		
10) <input checked="" type="checkbox"/> The drawing(s) filed on <u>12 December 2003</u> is/are: a) <input checked="" type="checkbox"/> accepted or b) <input type="checkbox"/> objected to by the Examiner. Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a). Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).		
11) <input type="checkbox"/> The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.		
<b>Priority under 35 U.S.C. §§ 119 and 120</b>		
12) <input checked="" type="checkbox"/> Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f). a) <input checked="" type="checkbox"/> All    b) <input type="checkbox"/> Some * c) <input type="checkbox"/> None of: 1. <input type="checkbox"/> Certified copies of the priority documents have been received. 2. <input type="checkbox"/> Certified copies of the priority documents have been received in Application No. _____. 3. <input checked="" type="checkbox"/> Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)). * See the attached detailed Office action for a list of the certified copies not received.		
13) <input type="checkbox"/> Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78. a) <input type="checkbox"/> The translation of the foreign language provisional application has been received.		
14) <input type="checkbox"/> Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.		
<b>Attachment(s)</b>		
1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)		
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)		
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.		
4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ .		
5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)		
6) <input type="checkbox"/> Other: _____ .		

## DETAILED ACTION

Applicant's cancellation of claims 9 and 11 in Paper No.10 is acknowledged.

### ***Specification***

The disclosure is objected to because of the following informalities: the BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S) and DETAILED DESCRIPTION OF THE INVENTION should be separated in section headings.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claims 1,2,5, 6,8, are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 1,5,6,8, it is unclear what each claim comprises.

In claim 1, lines 2,3 is the expression "X and Z-axes (where the Z-axis is the axis of rotation of the workpiece and the X-axis is perpendicular thereto)" being claimed?

in line 4, is the expression "machine wheel head for movement parallel to the X and Z-axis of the machine" being claimed?

Art Unit: 3723

in lines 6,7,8 1, is the expression “ the grinding wheel having a cylindrical surface that is parallel to the axis of rotation of the grinding wheel and a circular face that is perpendicular to the axis of rotation of the grinding wheel” being claimed?

in line 10, is the term “**X and Z-axis drives**” being claimed?

in lines 11,12, is the term “control signals” being claimed?

**In claim 5**, lines 2,3,4, is the expression “ *the grinding wheel having an axis of rotation and having a cylindrical surface that is parallel to the axis of rotation and a circular face that is perpendicular to said axis of rotation*” being claimed?

**In claim 6**, lines 12, it has been held that the functional “whereby” statement does not define any structure and according cannot serve to distinguish. In re Mason, 114 USPQ 127, 44, CCPA 937 (1957); and

in line 12, the phrase “***the external cylindrical surface***” lacks antecedent basis.

**In claim 8**, lines 1-6, is the expression “grinding wheel having a wheel head carrying a grinding wheel that.....to the workpiece axis of rotation” being claimed?

In line 7, it has been held that the functional “whereby” statement does not define any structure and according cannot serve to distinguish. In re Mason, 114 USPQ 127, 44, CCPA 937 (1957); and

in lines 7-10 is the expression “the grinding machine moves the wheel head and the workpiece carriage along the two orthogonal directions so as to produce a net movement of the wheel head relative to the workpiece along a line of action which subtends an angle of less than 90°, relative to the axis of rotation of the workpiece” being claimed?

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 5, 6, 8, are rejected under 35 U.S.C. 102(b) as being anticipated by Asano et al. (5,562,523).

**With respect to claim 5,** Asano et al. disclose a computer controlled grinding machine comprising a wheel head (13), having a grinding wheel (19) mounted for rotation about an axis, along a selected line of action into engagement with a workpiece, wherein the line of action extends at an angle of less than 90<sup>0</sup> to the axis of rotation of the workpiece, so that ungrounded material forming part of a cylindrical surface of the workpiece and an adjoining radial end face of the workpiece can be ground in a single plunge grind, in which the wheel head moves along the said line of action into engagement with the workpiece and away therefrom after grinding when programmed (see fig. 3).

**With respect to claim 6,** Asano et al. disclose a grinding machine comprising a grinding wheel (19) mounted on a wheel head (13), that move along an X-axis; a workpiece (W) rotating about an Z-axis that is perpendicular to the X-axis, wherein said workpiece is mounted on a carriage (12) which is movable parallel to the Z-axis, and an X-axis drive means (see col. 3, lines 44-45) for advancing and retracting the wheel head parallel to the X-axis; a Z-axis drive means (see col. 3, lines 26-29) for moving the

carriage parallel to the Z-axis, and a computer which is programmed to generate appropriate X-axis drive and Z-axis drive control signals to produce simultaneous movement of the wheel head and workpiece, such that the movement of the wheel head relative to the workpiece is along a line of action which subtends an angle with the Z-axis which is less than  $90^{\circ}$  wherein the external cylindrical surface of the grinding wheel serves to remove material from the cylindrical surface of the workpiece and an adjoining circular face of the wheel engages a radial shoulder of the workpiece to grind the latter to size as the wheel head is advanced along the line of action (see figs. 3,4).

**With respect to claim 8,** Asano et al. disclose a computer controlled grinding machine comprising a workpiece (W) that is movable by means of a carriage (12) along an axis parallel to the axis of rotation of the workpiece and perpendicular to the direction of advance and retraction of a wheel head (13) carrying a grinding wheel (19) and in which the wheel is mounted for rotation about an axis which throughout remains parallel to the workpiece axis of rotation when programmed to move the wheel head and the workpiece carriage along the two orthogonal directions so as to produce a net movement of the wheel head relative to the workpiece along a line of action which subtends an angle of less than  $90^{\circ}$ , relative to the axis of rotation of the workpiece (see col. 3, lines 26-45 & fig. 3).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asano et al (5,562,523) in view of Kamamura et al. (6,663,471 B2).

**With respect to claim 1,** Asano et al. disclose a grinding machine comprising a grinding wheel (19) mounted on a wheel head (13), that move along an X-axis; a workpiece (W) rotating about an Z-axis that is perpendicular to the X-axis, wherein said workpiece is mounted on a carriage (12) which is movable parallel to the Z-axis, and an X-axis drive means (see col. 3, lines 44-45) for advancing and retracting the wheel head parallel to the X-axis; a Z-axis drive means (see col. 3, lines 26-29) for moving the carriage parallel to the Z-axis, and a computer which is programmed to generate appropriate X-axis drive and Z-axis drive control signals to produce simultaneous movement of the wheel head and workpiece, such that the movement of the wheel head relative to the workpiece is along a line of action which subtends an angle with the Z-axis which is less than 90<sup>0</sup> wherein the external cylindrical surface of the grinding wheel serves to remove material from the cylindrical surface of the workpiece and an adjoining circular face of the wheel engages a radial shoulder of the workpiece to grind the latter to size as the wheel head is advanced along the line of action (see figs. 3,4).

Art Unit: 3723

**Asano et al.** fail to disclose a grinding wheel mounted on a wheel head having drive means for moving the wheel head relative to the workpiece parallel to an X-axis and Z-axis respectively.

**Kamamura et al.** disclose a grinding wheel mounted on a wheel head having drive means for moving the wheel head relative to the workpiece parallel to a c-axis and d-axis respectively (see col. 4, lines 47-62 & fig.1).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the apparatus of Asano et al. with drive means for moving the wheel head relative to the workpiece parallel to an c-axis and d-axis respectively in view of Kamamura et al. so as to axially displaced the grind wheel.

**With respect to claim 2**, Asano et al. disclose wherein the line of action achieved by the two X and Z movements of the wheel head is 45<sup>0</sup> (see fig.3).

#### *Response to Amendment*

Applicant's arguments filed 12/4/04 have been fully considered but they are not persuasive.

**Applicant argues** that U.S. Patent No. 5,183,026 to Ohta et al. "which shows the grinding wheel G having a wheel shaft 121 which is not parallel to the axis of rotation Z of the workpiece". However, **Asano et al.** disclose the concept of a grinding wheel that is mounted for rotation about an axis, which throughout remains parallel to the workpiece axis of rotation.

Art Unit: 3723

**Applicant argues** that U.S. Patent No. 5,533,931 to Imai et al. "does not have a radial surface which has to be ground". However, Imai et al. disclose the concept of a grinding wheel (G) that is mounted for rotation about an axis, which throughout remains parallel to the axis of rotation of the workpiece (W), along a selected line of action into engagement with the workpiece.

**Applicant argues** that U.S. Patent No. 5,954,568 to Wirz "does not cure the deficiency of the Ohata reference". However, Wirz discloses the concept of a grinding wheel mounted on a wheel head having drive means for moving the wheel relative to the workpiece parallel to an X and Z-axes respectively.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony Ojini whose telephone number is 703 305 3768. The examiner can normally be reached on 7.30 to 5.00 Tuesday-Friday with every other Monday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Hail can be reached on 703 308 2687. The fax phone numbers for the organization where this application or proceeding is assigned are 703 308 3590 for regular communications and 703 746 3277 for After Final communications.

Application/Control Number: 09/890,181  
Art Unit: 3723

Page 9

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308 1148.

A handwritten signature consisting of the letters "ADP" in cursive script.

AO  
January 28, 2004